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Effectiveness of Poultry Extension

A Study of 612 Farms with Poultry in Franklin, Miami, and Guernsey Counties, Ohio, 1927

M. C. Wilson and J. E. McClintock

UNITED STATES DEPARTMENT OF AGRICULTURE
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DISTRIBUTION: One copy of this circular has been sent to each extension director, State and assistant State county agent leader, State and assistant State home demonstration leader, State and assistant State club leader, each poultry specialist, and each agricultural college and experiment station library.

EFFECTIVENESS OF POULTRY EXTENSION

A Study of 612 Farms with Poultry in Franklin, Miami, and Guernsey Counties, Ohio, 1927

M. C. Wilson[1] and J. E. McClintock[2]

PURPOSE OF STUDY

The detailed study of the poultry project reported in this circular was undertaken for the purpose of obtaining reliable information regarding the practices followed by farmers, and to throw some light on the relative effectiveness of methods employed in poultry extension teaching. A detailed study of a single project also makes it possible to consider the extent to which the various teaching means and agencies have been employed as well as their effectiveness in bringing about the acceptance of the practices taught. The poultry project was selected because of the widespread interest in poultry throughout the State.

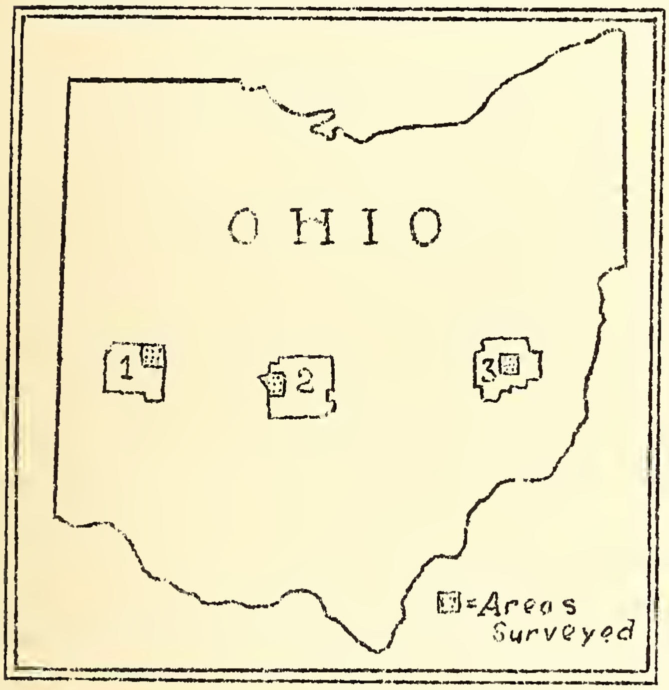

Fig. 1. - Location of areas surveyed in (1) Miami, (2) Franklin, and (3) Guernsey Counties, Ohio, in poultry project study

PLAN AND SCOPE TO STUDY

The data were collected by the survey method, the farmers in typical sections being personally interviewed by representatives of the Federal or State extension services. Records were obtained from 612 farms with poultry in areas of approximately two townships each in Franklin, Miami, and Guernsey Counties (figs. 1 and 2). This number is approximately 91 per cent of all farms located in the areas studied.

ORGANIZATION OF POULTRY EXTENSION IN OHIO

The poultry extension project is organized in the same way as other subject-matter lines of work, In the counties, the poultry work is handled by the county extension agents, usually by the agricultural agent. The county workers are assisted by two full-time poultry specialists who assume considerable responsibility for outlining the state-wide poultry extension program.

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A

No. ___Co.______ POULTRY EXTENSION SURVEY Date__________

Name______________________________Address______________________
Owner__________Tenant__________No. hens: Jan. 1, 1927__________Breed__________
Years breed kept______Pedigreed males used________Source of baby chicks________
__________Date hatched__________No. chicks hatched: 1927______1926________
No. chicks raised__________No. pullets kept over winter__________________
How are chicks brooded?____
Was brooder house moved this year?____Are chicks raised separate from old hens?___
Are chicks fed commercial mash?____Home-mixed mash?__________Milk?__________
Are laying birds fed commercial mash?_______Home-mixed mash_________Milk?_______
Kind of mash feeder used?____
Are artificial lights used?__________Type of laying house used?______________
No. times flock is culled for egg production during year?______________________
How are lice controlled?____________________Mites controlled?_______________
What causes greatest losses: Chicks____
______________Mature birds?____
Nature of records kept?____
Are hatching eggs sold?_____________To hatchery?__________Baby chicks?_________
Breeding stock__________Where are eggs sold?____________Where is poultry sold
___________________________Home dressed?________________________________

Member of what poultry association?____
Poultry extension activities on farm: Adult______________________________
Junior____

Agricultural extension service of the University of Ohio and United States Department of Agriculture cooperating.

Fig. 2 a. Obverse side of questionnaire card used in poultry study.

Check extension activities relating to poultry attended or personal contacts with extension workers regarding poultry keeping:
Result demonstration: Adult (dem.a.)_____Junior (dem.jr.)_____Method demonstration meeting______General meeting (mtg.)_____Leader-training meeting (l.tr.)__________
Extension school (e.s.)_______Study course (s.c.)_________Bulletin (Bul.)_________
Circular letter (cir.l.)______News story (n.s.)_________Exhibit (exh.)________Farm visit (f.v.)______Office call(o.c.)___Telephone call(tel.)___Correspondence(cor.)__
Radio talk (r.) Indirect (ind.)

Check poultry practices adopted due to extension influence				Other agencies contributing
Practice	Extension method responsible	C.A.	Specialist	
Pedigreed males				
Source of chicks				
Brooder house				
Chick feeding				
Hen feeding				
Mash boxes				
Artificial lights				
Hen house				
Lice and mite control				
Control of disease				

Fig. 2 b. Reverse side of questionnaire card used in poultry study.

During the calendar year immediately preceding the collection of data, the poultry specialists devoted an average of seven days to poultry work in each of the three counties studied. The county agents in these counties devoted approximately 11 per cent of their working time for the year to this project.

HISTORY OF EXTENSION IN AREAS

A county agricultural agent has been cooperatively employed in Franklin County since December, 1916, and a home demonstration agent since January, 1918.

In Miami County an agricultural agent has been employed continuously since September 1, 1915, there having been two changes in personnel since the work was inaugurated. A home demonstration agent was first employed in this county on May 1, 1924.

Guernsey County has had an agricultural agent since August 1, 1921, but has never had a home demonstration agent. None of the three counties studied has cooperated in the employment of a county club agent.

GENERAL INFORMATION REGARDING FARMS STUDIED

Of the 612 farms included in the study all kept chickens. Sixty-seven per cent were operated by owners and 33 per cent by tenants. The average number of hens per farm on January 1, 1927 was 89, and of this number 58 were pullets (Table 1). A total of 256 chicks per farm were purchased or hatched in 1927, an average increase of 31 per farm over 1926. Of the 256 chicks per farm started in 1927, 169 were raised to July of that year. That the poultry business was being increased slightly is indicated by the larger number of chicks started in 1927 and by the announced intention of keeping a few more pullets for laying purposes in 1927 than in 1926. Flocks of 100 or fewer chickens were raised on 283 farms in 1927, while 329 farmers raised flocks of more than 100 chickens. One hundred and seventy-five farmers raised from 101 to 200 chickens while 154 farmers raised more than 200 chickens that year. On these latter farms, poultry raising might be considered as a major farm enterprise.

Table 1. - General information pertaining to farms studied

Item	Number	Percentage
Records obtained	612	100
Farms operated by owners	412	67
Farms operated by tenants	200	33
Total hens and pullets per farm January 1, 1927	89	--
Pullets per farm January 1, 1927	58	--
Pullets expected to keep per farm during 1928	65	--
Increase in pullets proposed to keep	7	12
Poultry flocks with pedigreed males	21	3
Chicks hatched per farm 1926	225	--
Percentage of chickens hatched kept as pullets for 1927		25.7
Chicks hatched per farm 1927	256	--
Increase in chicks hatched per farm	31	14
Chicks raised per farm to July 1927	169	66

Chick Rearing

It is still the common practice for farmers to hatch their own chicks either with incubators or hens, as indicated by 84 per cent of the farms reporting this practice. Six per cent of the farms had part or all of their chicks hatched by some one else from their own eggs. Baby chicks were obtained from hatcheries not accredited in the case of 15 per cent of the farms, while 4 per cent of the farms purchased chicks from accredited hatcheries (Table 2.).

April and May are the months when most farmers hatch or buy their chicks. Twenty-three per cent of the farms studied reported brooding chicks during March or earlier, while 9 per cent of the farms hatched chicks during June or later. The larger poultry farms start their chicks somewhat earlier than the farms where poultry raising is conducted on a small scale. On many farms the hatching of chicks was distributed over a considerable period of time.

Table 2. - Chick rearing

Item	Total farms	Number of chickens raised: 1-50	51-100	101-200	201 and over
Number of records obtained	612	117	166	175	154
Average number of chicks hatched	256	86	146	253	507
Percentage obtaining baby chicks from accredited hatchery	3.8	.8	1.8	2.8	9.1
Percentage obtaining chicks from ordinary hatchery	15.2	7.7	10.2	17.1	24.0
Percentage having chicks custom hatched	5.9	1.7	1.8	8.6	10.4
Percentage hatching chicks at home	84.0	85.5	91.0	88.0	70.8
Percentage hatching chicks during March or earlier	23.0	9.3	13.2	24.0	41.6
Percentage hatching chicks during April	67.3	52.1	60.8	81.7	69.5
Percentage hatching chicks during May	48.7	48.7	60.2	51.4	33.1
Percentage hatching chicks during June and later	9.3	13.6	11.4	9.1	3.9
Percentage brooding chicks with:					
Hens	70.6	81.2	84.3	76.0	41.6
Oil brooder	7.5	3.4	6.6	6.8	12.3
Coal brooder	20.5	6.0	6.6	14.3	55.2
Gas brooder	.5	0.0	.6	.6	.6
Percentage raising chickens separate from hens	24.2	10.2	15.1	15.6	53.2

Brooding chicks with hens was the most common practice on farms with all sizes of poultry flocks. The use of artificial brooders, particularly the coal-stove brooder, was much more common where large numbers of chickens were raised than in the case of small flocks.

The practice of letting young chickens run with the laying flock is still followed on most of the farms studied. Where more than 200 chickens were raised, the young chickens were raised apart from the hens in one-half of the cases.

Poultry-Feeding Practices

Commercial mash was fed to laying hens on 17 per cent of the farms and to chicks on 36 per cent of them (Tables 3 and 4). The feeding of home-mixed mash to hens was reported for 27 per cent of the farms and to chicks for 22 per cent of the farms. The feeding of mash was practiced on a higher percentage of the large poultry flocks than of the small flocks. Commercial mash was used more extensively than home-mixed mash for feeding chicks, while home-mixed mash was preferred for hens. Milk was fed to young chickens on approximately two-thirds of the farms and to hens on slightly more than half the farms.

Reel feeders were used on 7 per cent of all farms and on 32 per cent of the farms with more than 200 hens (Table 4). Other open feeders were used on 25 per cent of the farms. Self-feeders of the closed type were used on 14 per cent of the farms.

Table 3. - Feeding chicks

Item	Total farms	Number of chicks raised: 1-50	51-100	101-200	201 and over
Number of farms	612	117	166	175	154
Percentage of farms feeding commercial mash	36.4	26.5	28.9	36.0	52.6
Percentage of farms feeding home-mixed mash	22.2	12.8	13.8	25.1	35.1
Percentage of farms not feeding mash	43.9	63.2	57.8	42.3	22.7
Percentage of farms feeding milk in any form	66.2	56.4	61.4	68.6	76.0

Table 4. - Feeding laying hens

Item	Total farms	Number of hens kept 1-50	51-100	101-200	201 and over
Number of farms	612	198	271	124	19
Percentage of farms feeding commercial mash	17.0	12.1	15.1	22.6	57.9
Percentage of farms feeding home-mixed mash	27.0	15.2	27.7	41.1	47.4
Percentage of farms not feeding mash	59.3	72.2	57.6	39.5	10.5
Percentage of farms feeding milk in any form	52.1	44.4	53.9	58.9	63.2
Percentage of farms using reel feeder	7.2	3.0	6.6	11.3	31.6
Percentage of farms using open feeder	25.3	17.8	25.1	37.9	26.3
Percentage of farms using self-feeder	14.0	6.1	17.0	18.5	26.3

Flock-Management Practices

Artificial lights as a means of increasing egg production were used on 3 per cent of all farms and on 26 per cent of the farms with more than 200 hens (Table 5). One-third of the farmers culled their poultry an average of twice during the year. In the case of the poultry farms with more than 200 hens 89 per cent culled an average of 3.4 times during the year.

Records of eggs laid were kept by 21 per cent of the farms with more than 200 hens while an additional 10 per cent kept a record of the egg sales as well. Twenty-one per cent of the large poultry farms and 3 per cent of all farms were keeping cost-account records.

Table 5. - Flock management

Item	Total farms	Number of hens kept 1-50	51-100	101-200	201 and over
Number of farms	612	198	271	124	19
Percentage of farms using artificial lights on poultry	2.8	3.0	1.1	2.4	26.3
Percentage culling flocks	32.7	14.1	34.3	50.0	89.5
Average number of times flock culled during year	1.9	1.1	1.6	1.2	3.4
Percentage of farms keeping egg calendars	10.0	3.5	10.0	18.5	21.0
Percentage keeping record of eggs and sales	5.2	1.0	5.2	11.3	10.5
Percentage keeping record of eggs and feed	0.2	--	0.4	--	--
Percentage keeping cost accounts	2.8	1.0	2.2	4.0	21.0
Percentage of farms with laying houses with: Shed roof	59.5	59.6	56.4	65.3	63.2
Gable roof	24.3	19.2	32.5	18.5	--
Two-thirds span	1.5	.5	1.8	.8	10.5
Semimonitor	2.1	1.0	1.5	4.8	5.3
Other	4.6	5.0	4.0	3.2	15.8

In most instances a special building was provided for the poultry, though there were numerous instances where the hens had no special quarters. The shed-roof type of poultry house was found on 59 per cent of the farms, the gable-roof type on 24 per cent, the two-thirds span roof on 2 per cent, the semimonitor on 2 per cent, and other types 5 per cent.

Marketing Poultry and Eggs

Eggs for hatching purposes were sold by 13.1 per cent of the farms, while 2 per cent sold baby chicks. Twenty-one per cent of the farmers sold part or all of their eggs direct to consumers; 27 per cent sold eggs to hucksters; 31 per cent sold eggs to the local grocer for cash; and 37 per cent exchanged eggs for groceries and other household supplies (Table 6). Where more than 200 hens were kept more farms sold eggs to hucksters than marketed them in any other way. Ten per cent of the large poultry raisers shipped eggs to a distant market.

Table 6. - Marketing eggs

Item	Total farms	Number of hens kept 1-50	51-100	101-200	201 and over
Number of farms	612	198	271	124	19
Percentage selling hatching eggs	13.1	4.0	15.5	19.4	31.6
Percentage selling baby chicks	2.0	1.0	2.2	.8	15.8
Percentage selling eggs retail	20.6	19.2	18.4	26.6	26.3
Percentage selling eggs to hucksters	27.4	12.6	29.2	43.5	52.6
Percentage selling eggs to grocer (cash)	31.2	33.8	31.7	25.0	36.8
Percentage selling eggs to grocer (trade)	37.4	40.4	40.2	32.2	--
Percentage of farms shipping eggs	0.3	0	0	0	10.5

Hucksters purchased surplus poultry from 36 per cent of the farms. (Table 7). Poultry dealers were sold poultry by 25 per cent of the farmers. Nearly 19 per cent sold poultry to the local grocer for cash or trade, while 16 per cent sold directly to the consumer. Poultry for breeding purposes was sold from 1.6 per cent of the farms, and 2.0 per cent of the farms shipped poultry to distant markets.

Table 7. - Marketing poultry

Item	Total farms	Number of chickens raised 1-50	51-100	101-200	201 and over
Number of farms	612	117	166	175	154
Percentage selling breeding stock	1.6	.8	.6	1.1	3.9
Percentage of farms selling retail	16.3	13.7	15.1	17.9	23.4
Percentage of farms selling to grocer	18.8	19.6	21.1	21.1	13.0
Percentage of farms selling to huckster	36.1	19.6	33.1	42.8	44.2
Percentage of farms selling to dealer	25.2	20.5	25.9	26.3	26.6
Percentage of farms shipping poultry	2.0	0.8	1.8	1.1	3.9

Methods Employed in Controlling Poultry Parasites

Without attempting to acquire information regarding their relative effectiveness a record was made of the various materials used and methods employed in controlling poultry lice and mites (Tables 8 and 9). The use of various kinds of louse powders was reported by 32 per cent of the farmers, followed by crude oil 11 per cent, and sodium fluoride 11 per cent. For mites, crude oil was used by 26 per cent of the farmers. Kerosene was second in popularity with 17 per cent of the farmers using it. In some cases it was apparent that the same material was used to control both lice and mites without regard to the suitability of the material for controlling both kinds of insects.

Table 8. - Materials used for lice control

Item	Number of farms using material	Percentage of farms using material
Insect powder	195	31.9
Crude oil	69	11.3
Sodium fluoride	65	10.6
Kerosene	50	8.2
Disinfectant	47	7.7
Grease	44	7.2
Lime	34	5.6
Blue ointment	23	3.8
Dip	19	3.1
Motor oil	10	1.6
Ashes	9	1.5
Sulphur	4	.6
Commercial compound	4	.6
London purple	3	.5
Tobacco	3	.5
Gasoline	2	.3
Carboleneum	2	.3
Lye	2	.3
Dirt	2	.3
Salt	2	.3
Clean house	2	.3
Vaseline	1	.2
Creosote	1	.2
Carbolic acid	1	.2
Smoke	1	.2
Carbide	1	.2
Singe roost	1	.2

Table 9. - Materials used for mite control

Item	Number of farms using method	Percentage of farms using method
Crude oil	160	26.1
Kerosene	106	17.3
Disinfectant	62	10.1
Lime	54	8.8
Motor oil	39	6.4
Dip	23	3.8
Insect powder	15	2.4
Carbolic acid	11	1.8
Grease	10	1.6
Creosote	7	1.1
Creolin	5	.8
Sulphur	5	.8
Commercial compound	4	.6
White paint	4	.6
Carboleneum	3	.5
Sodium fluoride	3	.5
Ashes	2	.3
Carbide	2	.3
Gasoline	1	.2
Lysol	1	.2
London purple	1	.2
Burning	1	.2
Smoke	1	.2

Causes of Poultry Losses

An effort was made to learn the principal sources of loss in raising chicks, also with mature birds (Tables 10 and 11). Although the causes given may not in all cases have been properly diagnosed, the replies do furnish valuable data regarding the most important handicaps to poultry raising in the areas studied.

In the case of chicks, loss by predatory birds and animals, particularly rats, was most frequently reported, 23 per cent of the farms so reporting. White diarrhea was reported by 20 per cent of the farmers. Wet cold weather was the only other cause of loss in chicks reported by more than 5 per cent of the farmers.

In the case of mature birds, no single cause of loss was reported by as many as 5 per cent of the farmers. The three diseases causing loss of birds most frequently reported were cholera, tuberculosis, and roup.

Table 10. - Causes of losses in chicks

Item	Number of farms reporting cause	Percentage of farms reporting cause
Rats and predatory animals	140	22.9
White diarrhea	124	20.3
Wet cold weather	45	7.4
Coccidiosis	29	4.7
Unknown diseases	29	4.7
Crushed or smothered	25	4.1
Bad feed and water	17	2.8
Gapes	17	2.8
Chilled	16	2.6
Lice and mites	14	2.3
Weak	11	1.8
Thieves	5	.8
Late hatch	4	.6
Incubation	3	.5
Cholera	3	.5
Roup	3	.5
Tuberculosis	2	.3
Worms	2	.3
Indigestion	2	.3
Neglect	1	.2
Unsanitary	1	.2
Accidents	1	.2
Lack of equipment	1	.2
Coal-stove brooder	1	.2
Limberneck	1	.2
Creosol dip	1	.2

Table 11. - Causes of losses in mature birds

Item	Number of farms reporting cause	Percentage of farms reporting cause
Cholera	29	4.7
Tuberculosis	27	4.4
Roup	22	3.6
Unknown diseases	14	2.3
Worms	13	2.1
Thieves	8	1.3
Lice	7	1.1
Too fat	4	.6
Accidents	3	.5
Colds	2	.3
Predatory birds and animals	2	.3
Weak legs	2	.3
Blackhead	1	.2
Improper feeding	1	.2
Septicaemia	1	.2
Lame	1	.2
Infected mouths	1	.2
Poison	1	.2
Coccidiosis	1	.2
Damp floor	1	.2
Rupture	1	.2

Breeds of Poultry Kept

Approximately one-third of all the farms kept Barred Plymouth Rocks (Table 12). The next most popular breed was Rhode Island Red, kept on 18 per cent of the farms, followed by White Leghorn on 10 per cent of the farms, White Wyandotte 8 per cent, and Buff Orpington on 5 per cent of the farms. Many farms kept more than one distinct breed. Mixed or mongrel poultry was reported on 28 per cent of the 612 farms included in the study.

Table 12. - Breeds of poultry kept

Breed or variety	Number of farms	Percentage of all poultry farms	Average number of years kept
Barred Plymouth Rock	205	33.5	11.6
Mixed breeds	173	28.3	-
Rhode Island Red	108	17.6	6.4
White Leghorn	63	10.3	5.0
White Wyandotte	49	8.0	6.3
Buff Orpington	31	5.1	3.5
Brown Leghorn	11	1.8	4.3
White Plymouth Rock	8	1.3	10.3
Light Brahma	6	1.0	18.5
Black Minorca	5	.8	4.4
White Orpington	3	.5	3.3
Buff Plymouth Rock	2	.3	3.0
Ancona	1	.2	4.0
Buff Cochin	1	.2	-
Partridge Plymouth Rock	1	.2	5.0
Black Langshan	1	.2	30.0
Game	1	.2	50.0
Houdan	1	.2	-
Buff Leghorn	1	.2	1.0
Red Leghorn	1	.2	2.0

INFLUENCE OF EXTENSION UPON POULTRY PRACTICES

In the case of every farm visited a record was made of the changes made in poultry practices in any way attributable to the activities of the cooperative extension system. A total of 832 instances of specific changes made in handling the poultry enterprise were reported for 289 or 47 per cent of the 612 farms studied (Table 13). Changes in the feeding of chicks were reported for 188 farms and in hen feeding for 161 farms. The culling out of low-producing birds according to methods taught by the extension service was reported for 141 farms, lice and mite control 90 farms, improved types of mash feeders 75 farms, brooder houses 52 farms, laying houses 40 farms, control of disease 34 farms, source of baby chicks 28 farms, use of artificial lights 10 farms, and pedigreed males for 8 farms. Although poultry extension has been instrumental in bringing about the adoption of improved poultry practices on nearly 50 per cent of the farms, it is evident from the information on present practices followed that only a beginning has been made. There are many more farmers to be brought under extension influence and on those farms reached there is opportunity for the adoption of still other improved poultry practices.

Table 13. - Influence of extension upon poultry practices

Item	Number	Percentage of all farms
Records obtained	612	100
Farmers adopting improved poultry practices due to extension influence	289	47.2
Instances of adoption of improved practices	832	--
Farmers adopting improved practices in:		
Chick feeding	188	30.7
Hen feeding	161	26.3
Culling	141	23.0
Lice and mite control	90	14.7
Mash boxes	75	12.2
Brooder house	52	8.5
Hen house	40	6.5
Control of disease	34	5.6
Source of chicks	28	4.6
Artificial lights	10	1.6
Pedigreed males	8	1.3

METHODS INFLUENCING ADOPTION OF PRACTICES

The influence of poultry bulletins was reported in connection with 40 per cent of the 832 instances of adoption of improved poultry practices (Table 14). The indirect spread of good practices from neighbor to neighbor was mentioned in connection with 25 per cent of the practices. General meetings, method demonstration meetings, and news stories were other means affecting more than 10 per cent of the practices adopted. Result demonstrations, circular letters, farm visits, and radio were the only other means influencing the adoption of an appreciable number of practices.

Table 14. - Methods influencing the adoption of poultry practices

Method	Number of practices	Percentage of total practices
Method demonstrations	109	13.1
Result demonstrations	61	7.3
General meetings	132	15.9
News stories	86	10.3
Bulletins	334	40.0
Circular letters	45	5.4
Exhibits	5	.6
Farm visits	35	4.2
Office calls	9	1.1
Correspondence	1	.1
Telephone	1	.1
Leader training	16	1.9
Extension schools	4	.5
Study courses	5	.6
Radio	26	3.1
Indirect	210	25.2

COMPARATIVE EFFECTIVENESS OF POULTRY EXTENSION METHODS

To throw some light on the effectiveness of the various means and agencies employed in poultry extension teaching, a record was made of all means and agencies through which the farmer or any member of his family had been exposed to extension information on poultry. The percentages of farmers exposed to the various extension methods are given in column one, Table 15. A record was also made of those means credited with having contributed to the adoption of each of the specific practices reported changed. The percentages of farmers influenced by the various means and agencies are listed in column two of the same table.

Table 15. - Comparative effectiveness of poultry extension methods

Item	Percentage of farmers exposed to methods	Percentage of farmers influenced by methods	Percentage exposed who were influenced
Method demonstrations	22.22	14.87	66.9
Result demonstrations	12.74	5.55	43.6
General meetings	30.06	10.94	36.4
News stories	41.66	8.82	21.2
Bulletins	38.23	21.07	55.1
Circular letters	15.68	4.41	28.1
Exhibits	32.02	.82	2.6
Farm visits	10.78	3.27	30.3
Office calls	5.88	.98	16.7
Correspondence	2.94	.16	5.6
Telephone	2.61	.16	6.2
Leader training	2.1	.65	30.8
Extension school	2.1	.49	23.1
Study course	1.14	.16	14.3
Radio	17.65	2.61	14.8
Indirect	32.84	19.60	59.7
Total, all methods	76.1	47.2	62.0

The percentage of farmers exposed to a particular method is an indication of the emphasis placed upon that method and its adaptability to exposing large numbers of people. The percentage of people influenced by the method reflects the quality of the method as a teaching means as well as the extent to which farmers are touched by the method. The ratio of takes to exposures presented in column three, Table 15, is probably a good indication of the relative teaching value of the various means and agencies as viewed by the poultry farmers in the areas studied. Of those means to which sufficient numbers were exposed to make comparison satisfactory, method demonstration meeting, indirect influence, and bulletins led in ratio of takes to exposures with 67 per cent, 60 per cent and 55 per cent respectively to their credit. Other means with a high percentage of influence following exposure were result demonstrations 44 per cent, general meetings 36 per cent, farm visits 30 per cent, circular letters 28 per cent, and news stories 21 per cent. Approximately 15 per cent of the farmers listening to poultry program over the radio made some use of the information. Although nearly one-third of all the farmers had seen poultry exhibits less than 3 per cent of those who saw them reported the use of information obtained from them.

POULTRY COMPARED TO ALFALFA AND DAIRY

It is interesting to study the effectiveness of methods in extending poultry information as compared to information on alfalfa growing and dairying, similar studies of these two projects having been previously made.[1] There is naturally a wide variation in the percentage of farmers exposed to alfalfa, dairy, and poultry extension methods in the three areas owing to differences in emphasis and adaptability of methods to the subject matter involved (Table 16). There is, however, a decided uniformity in the percentages of those exposed who were influenced. Result demonstrations, general meetings, bulletins, exhibits, farm visits, office calls, and indirect had approximately the same relative influence whether in extending alfalfa information in Wisconsin, dairy information in New Jersey, or poultry information in Ohio. Method demonstration meetings were much more effective in poultry than in alfalfa or dairying. News stories were more effective in extending poultry information than dairy information but less effective in poultry than in alfalfa extension. Circular letters were proportionately more effective in both poultry and alfalfa extension than in dairy extension. It will be noted that exhibits had comparatively little influence whether employed in extending alfalfa, dairy, or poultry information.

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[1] Wilson, M. C. and Clark, W. W. - Make Extension Work More Effective, Wisconsin Agricultural Experiment Station Bulletin 387.

Wilson, M. C. and Hulbert, A. M. - Effectiveness of Dairy Extension (New Jersey) United States Department of Agriculture Extension Service Circular 64.

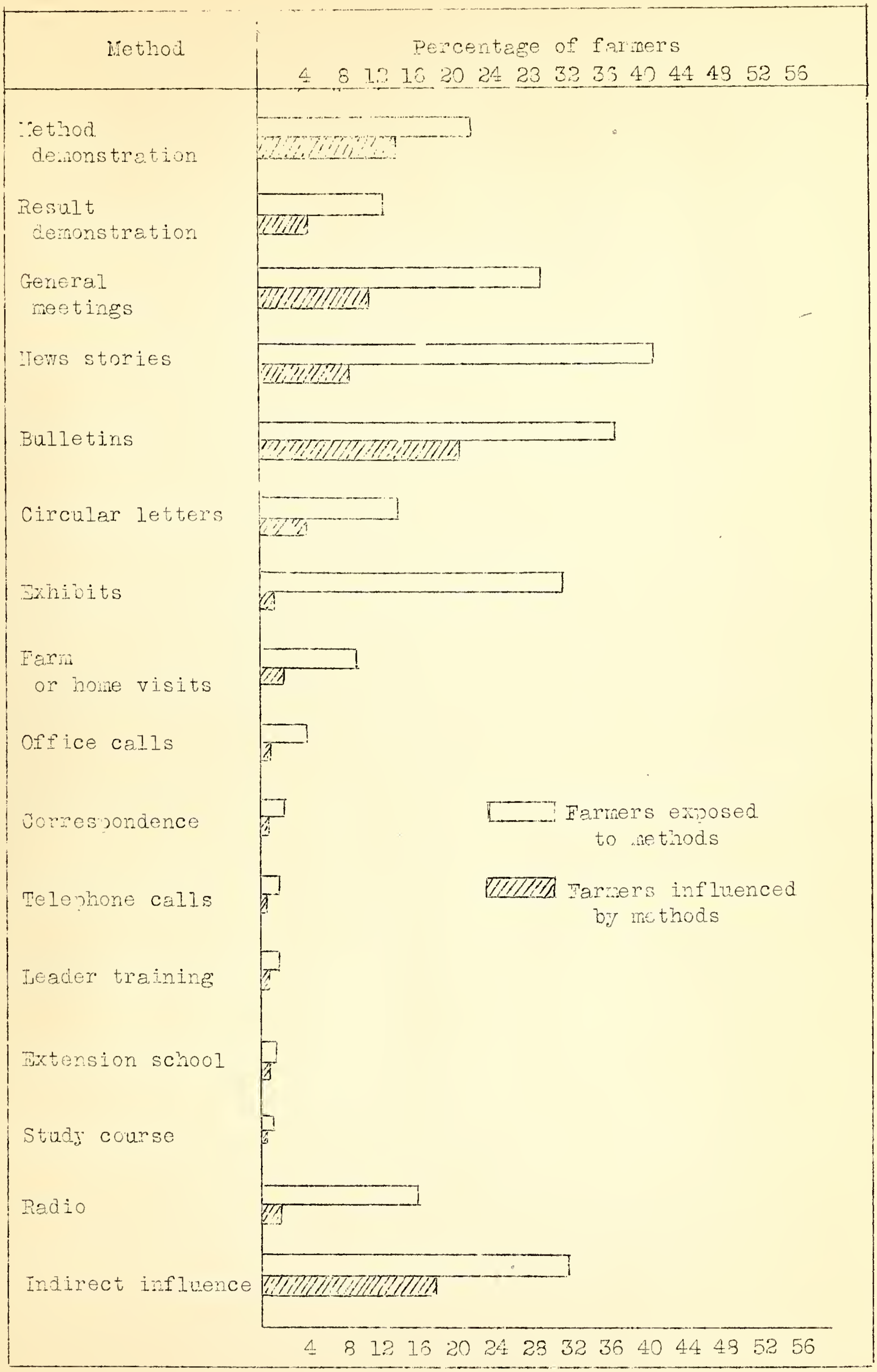

Fig. 3. - Comparative effectiveness of poultry extension methods

Table 16. – Comparative effectiveness of extension methods[1]

Alfalfa, Wisconsin; Dairy, New Jersey; Poultry, Ohio

Method	Percentage of farmers exposed to methods			Percentage exposed who were influenced		
	Alfalfa	Dairy	Poultry	Alfalfa	Dairy	Poultry
Method demonstrations	2.83	23.43	22.22	16.7	4.4	66.9
Result demonstrations	16.51	33.33	12.74	61.4	25.0	43.6
General meetings	69.81	52.60	30.06	75.3	42.6	36.4
News stories	59.90	68.23	41.66	44.1	7.6	21.2
Bulletins	39.38	66.67	38.23	37.1	28.1	55.1
Circular letters	24.29	59.89	15.68	20.4	4.3	28.1
Exhibits	4.95	70.83	32.02	4.8	2.9	2.6
Farm visits	8.25	58.33	10.78	45.7	45.5	30.3
Office calls	5.42	19.78	5.88	13.0	26.3	16.7
Correspondence	6.13	22.39	2.94	7.7	0	5.6
Telephone	1.18	8.33	2.61	0	0	6.2
Leader training	.47	3.12	2.1	0	0	30.8
Extension school	.24	-	2.1	100.0	-	23.1
Study course	-	-	1.14	-	-	14.3
Radio	-	-	17.65	-	-	14.8
Indirect influence	39.86	41.14	32.84	55.6	51.9	59.7

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[1] The data for this table were obtained from 424 alfalfa growers in Wisconsin in 1925, from 192 dairy farmers in New Jersey in 1926, and from 612 poultry farmers in Ohio in 1927.

LAND TENURE AS RELATED TO EFFECTIVENESS OF POULTRY EXTENSION

Whether the poultry farm was operated by the owner or by a tenant does not seem to have been of great significance. It is true that a slightly higher proportion of the owner-operator group were influenced by extension to adopt improved poultry practices than was true of the tenant-operator group (Table 17). A somewhat higher percentage of the owners than of tenants had been exposed to poultry extension methods, however, so that there was but slight difference in percentages of those exposed who were influenced to adopt practices in the two groups - 62.5 per cent for owners and 61 per cent for tenants.

Table 17. - Relation of land tenure to effectiveness of extension teaching

Land tenure	Number of farms	Percentage of farmers exposed to poultry extension	Percentage of farmers influenced to adopt practices	Percentage exposed who were influenced
Owner	412	77.7	48.5	62.5
Tenants	200	73.0	44.5	61.0

SIZE OF POULTRY FLOCK AS BEARING ON EFFECTIVENESS OF POULTRY EXTENSION

The importance of the poultry flock as measured by the number of hens was closely related both to the extent of exposures to poultry extension activities and to the percentage of those exposed who were influenced (Table 18). Where less than 50 hens were kept, 64 per cent of the farm families had come under the influence of poultry extension and of these 46 per cent reported improved practices adopted. Where 51 to 100 hens were kept, 61 per cent of the 78 per cent exposed to poultry extension adopted poultry practices. With from 101 to 200 hens, 89 per cent of the farmers had come under the influence of poultry extension, 77 per cent of whom adopted improved practices. Where more than 200 hens were kept 95 per cent had been touched by poultry extension and of this number 94 per cent reported the adoption of improved poultry practices. With larger poultry flocks, it is but natural that a greater proportion of the farmers should be interested in poultry information and the use of up-to-date poultry methods.

Table 18. - Relation of size of flock to effectiveness of extension teaching

Number of hens	Number of farms	Average number of hens	Percentage of farmers exposed to poultry extension	Percentage of farmers influenced to adopt practices	Percentage exposed who were influenced
1-50	198	34	63.6	29.3	46.0
51-100	271	81	77.8	47.6	61.1
101-200	124	151	89.5	68.5	76.6
201 and over	19	359	94.7	89.5	94.4

EDUCATIONAL TRAINING AS RELATED TO EFFECTIVENESS OF POULTRY EXTENSION

Where the farmer had received some high school or college training, 92 per cent had been exposed to poultry extension methods as compared to 72 per cent of those whose educational training had stopped with the common or graded school (Table 19). The percentage of those exposed who were influenced to take up better poultry practices was also somewhat greater where more than a common-school training had been received.

Table 19. - Education as related to effectiveness of extension teaching

Education of farmer	Number of farms	Percentage of farmers exposed to poultry extension	Percentage of farmers influenced to adopt practices	Percentage exposed who were influenced
Common school or less	495	72.3	43.0	59.5
More than common school	117	92.3	65.0	70.4

Regardless of whether the farms are grouped according to the educational training of the farmer or the farm women (Table 20), about 11 per cent more of the families exposed to poultry extension adopted improved practices where more than common or graded schools had been attended.

Table 20. - Education as related to effectiveness of extension teaching

Education of farm woman	Number of farms	Percentage of farmers exposed to poultry extension	Percentage of farmers influenced to adopt practices	Percentage exposed who were influenced
Common school or less	472	71.8	42.4	59.0
More than common school	140	90.7	63.6	70.1

SUMMARY

The study is based on information regarding poultry obtained from 612 farms in three Ohio counties.

The average number of hens per farm was 89 and the average number of chicks hatched or purchased in 1927 was 256. A part or all of the chicks were hatched at home on 84 per cent of the farms. In the case of 19 per cent of the farms a part or all of the baby chicks were purchased from hatcheries.

Chicks were brooded by hens on 71 per cent of the farms, artificial brooders being used on the remaining 29 per cent.

On slightly less than one-fourth of the farms, chicks were not permitted to run with the laying hens.

Commercial mash was used more extensively than home-mixed mash for feeding young chickens while home-mixed mash was preferred for hens. Milk was fed to young chickens on approximately two-thirds of the farms.

One-third of the farmers culled their flocks an average of twice during the year.

One farmer in six kept a record of eggs produced while but one farmer in 33 kept cost-account records on the poultry enterprise.

The bulk of the eggs were sold to hucksters or to the local grocery for either cash or trade. Surplus poultry was largely marketed to hucksters and poultry dealers.

The principal sources of loss in raising chicks were predatory animals and birds, and white diarrhea. The three diseases most frequently reported as causes of loss of mature birds were cholera, tuberculosis, and roup.

Barred Plymouth Rocks, Rhode Island Reds, and White Leghorns were the most popular breeds of poultry kept.

A total of 832 instances of specific changes made in handling poultry were reported for 289 or 47 per cent of the 612 farms studied. Practices relating to the feeding of chickens and hens, culling and control of lice and mites were most frequently reported.

Method demonstration meetings, indirect influence, bulletins, result demonstrations, general meetings, and farm visits were credited with having influenced a higher percentage of farmers exposed to them than was true of the other extension methods.

Whether the farm operator was the owner or a tenant made little difference in the percentage exposed to poultry extension who made practical use of the information obtained.

Not only were more farmers in touch with extension but a higher percentage of those in touch were influenced to adopt improved poultry practices where the number of hens kept was larger.

Where the farmer or farm woman had received some high school or college training about 11 per cent more of the families exposed to poultry extension adopted improved practices than where only common or graded schools had been attended.

Although nearly 50 per cent of the poultry keepers reported the adoption of one or more improved practices as the result of extension, only a small beginning has been made, as indicated by the nature of the practices being followed on many farms at the time the field data were collected.

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